The Intraplex® voice modules provide digital transport of voice-grade audio for telephone, intercom, fax, and modem circuits, and can transport FSK data for remote control, two-way radio, EAS audio and other audio monitoring applications.

E & M voice frequency modules are available with PCM coding (64 Kb/s per channel) or ADPCM coding (32 Kb/s per channel).

<table>
<thead>
<tr>
<th>Coding</th>
<th>E &amp; M modules for T1 systems</th>
<th>E &amp; M modules for E1 systems</th>
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</thead>
<tbody>
<tr>
<td>PCM</td>
<td>VF-25</td>
<td>VF-25E</td>
</tr>
<tr>
<td>ADPCM</td>
<td>VF-27</td>
<td>VF-27E</td>
</tr>
</tbody>
</table>

A choice of interfaces is available by selection of module adapters:

- 4-Wire with one 50-pin telco-type connector – MA-305 and MA-305C
- 4-Wire with four RJ-45 connectors – MA-306C
- 4-Wire with eight RJ-45 connectors – MA-308C
- 2-Wire with one 50-pin telco-type connector – MA-309C
- 2-Wire with four RJ-45 Connectors – MA-310

These modules plug into Intraplex access products, allowing voice channels to be combined with other types of payload channels for transport over T1 (1.5 Mb/s), E1 (2 Mb/s), Ethernet (NetXpress), or other high-speed digital lines.

**Product Features**

- Four independent voice channels per module; saves space, power and cost
- One-, two-, three-, or four-channel operation for bandwidth efficiency
- Selectable E & M signaling: Types I, II, III, V, or transmission only (TO) operation for application flexibility
- Support for fax or modem transmission at up to 9600 b/s (VF-25/VF-25E) or 2400 b/s (VF-27/VF-27E)
- Local and remote loopbacks for ease of testing
## Specifications

*Specifications and designs are subject to change without notice*

### General

| Modules                  | VF-25/VF-25E: four-channel PCM E & M or TO  
|                         | VF-27/VF-27E: four-channel ADPCM E & M or TO |
| System Compatibility    | The VF-25 and VF-27 are compatible with Intraplex T1 or Ethernet multiplexers  
|                         | The VF-25E and VF-27E are compatible with Intraplex E1 or Ethernet multiplexers  
|                         | E & M signaling for ADPCM modules (VF-27 and VF-27E) is not supported in Digital CrossConnect, NetXpress or NetXpress LX products |

### Voice Frequency

| Frequency Response       | 300 to 3000 Hz, ±0.5dB |
| Input/Output Level (Nominal) | 0 dBm in, 0 dBm out |
| Input/Output Level Range (4-Wire) | -16.0 to +3.0 dBm  
|                          | -10.0 to +10.0 dBm  
|                          | 0 dBm or -16 dBm  
|                          | 0 dBm or +7.0 dBm  |
| Input/Output Level Range (2-Wire) | Additional 0, 3 or 10 dBm output attenuation on MA-309C |

### Attenuation for Tandem Applications (MA-308, MA-308B, MA-308C)

Additional 23 dB attenuation can be implemented in transmit and/or receive circuits.

| Input/Output Impedance | 600 Ω |
| Idle Channel Noise    | Less than 23 dBnC0 |
| Signal to Distortion  | 1004 Hz input, 0 to 30 dBm: less than 33 dB in C message weighting |
| 2-Wire Echo Return Loss | ERL minimum: 28 dB; SRL high minimum: 20 dB; SRL low minimum: 20 dB |
| 4-Wire Trans Hybrid Loss | ERL minimum: 28 dB; SRL high minimum: 20 dB; SRL low minimum: 20 dB |
| 4-Wire RX Level Terminated From 2-Wire | -28.5 dB |

### Signaling

<table>
<thead>
<tr>
<th>Signaling Type (Selectable)</th>
<th>E &amp; M Type I, II, III, V, or transmission only (TO)</th>
</tr>
</thead>
</table>
| M-Lead Input                | Busy     | -20 to -60 V  
|                            | Ground   | Type I, II, III  
|                            | Idle     | Open  
|                            |          | Type I, II, III, V  
| *For Type V circuits where the MA sources current on the M-lead, use MA-305 or MA-308 |
| E-Lead Output               | Busy     | Ground  
|                            | Idle     | Open  
|                            |          | Type I, II, III, IV |

### Input/Output Modules

| Connectors | 50-pin telco-type female connector on MA-305, MA-305B, MA-305C, MA-309, MA-309C module adapters  
|            | Dual RJ-45 jacks provided on MA-308, MA308B, MA-308C for monitoring |

### Network Interface

| Coding and Data Rate | VF-25: μ-law PCM, 64 Kb/s per channel  
|                     | VF-25E: A-law PCM, 64 Kb/s per channel  
|                     | VF-27: μ-law ADPCM, 32 Kb/s per channel  
|                     | VF-27E: A-law ADPCM, 32 Kb/s per channel  
| Signaling Format    | VF-25/VF-27/VF-27E: Robbed Bit A, B  
|                     | VF-25E: CAS  
| Time Slot (DS0) Assignment | VF-25/VF-25E: One to four sequential time slots (one per active channel); starting time slot selectable  
|                         | VF-27/VF-27E: One or two sequential time slots (one for each two active channels); starting time slot selectable  

### Specifications

- **General**
  - **Modules**: VF-25/VF-25E: four-channel PCM E & M or TO; VF-27/VF-27E: four-channel ADPCM E & M or TO.
  - **System Compatibility**: The VF-25 and VF-27 are compatible with Intraplex T1 or Ethernet multiplexers; The VF-25E and VF-27E are compatible with Intraplex E1 or Ethernet multiplexers; E & M signaling for ADPCM modules (VF-27 and VF-27E) is not supported in Digital CrossConnect, NetXpress or NetXpress LX products.

- **Voice Frequency**
  - **Frequency Response**: 300 to 3000 Hz, ±0.5dB
  - **Input/Output Level (Nominal)**: 0 dBm in, 0 dBm out
  - **Input/Output Level Range (4-Wire)**: -16.0 to +3.0 dBm; -10.0 to +10.0 dBm; 0 dBm or -16 dBm; 0 dBm or +7.0 dBm
  - **Input/Output Level Range (2-Wire)**: Additional 0, 3 or 10 dBm output attenuation on MA-309C

- **System Compatibility**
  - **Attenuation for Tandem Applications (MA-308, MA-308B, MA-308C)**: Additional 23 dB attenuation can be implemented in transmit and/or receive circuits.

- **Input/Output Impedance**: 600 Ω

- **Idle Channel Noise**: Less than 23 dBnC0

- **Signal to Distortion**: 1004 Hz input, 0 to 30 dBm: less than 33 dB in C message weighting

- **2-Wire Echo Return Loss**: ERL minimum: 28 dB; SRL high minimum: 20 dB; SRL low minimum: 20 dB

- **4-Wire Trans Hybrid Loss**: ERL minimum: 28 dB; SRL high minimum: 20 dB; SRL low minimum: 20 dB

- **4-Wire RX Level Terminated From 2-Wire**: -28.5 dB

- **Signaling**
  - **Type (Selectable)**: E & M Type I, II, III, V, or transmission only (TO).
    - **M-Lead Input**:
      - Busy: -20 to -60 V
      - Ground: Type I, II, III
      - Idle: Open
      - Type I, II, III, V
    - *For Type V circuits where the MA sources current on the M-lead, use MA-305 or MA-308
  - **E-Lead Output**:
    - Busy: Ground
    - Idle: Open
    - Type I, II, III, IV

- **Input/Output Modules**
  - **Connectors**:
    - Dual RJ-45 jacks provided on MA-308, MA308B, MA-308C for monitoring

- **Network Interface**
  - **Coding and Data Rate**:
    - VF-25: μ-law PCM, 64 Kb/s per channel
    - VF-25E: A-law PCM, 64 Kb/s per channel
    - VF-27: μ-law ADPCM, 32 Kb/s per channel
    - VF-27E: A-law ADPCM, 32 Kb/s per channel
  - **Signaling Format**:
    - VF-25/VF-27/VF-27E: Robbed Bit A, B
    - VF-25E: CAS
  - **Time Slot (DS0) Assignment**:
    - VF-25/VF-25E: One to four sequential time slots (one per active channel); starting time slot selectable
    - VF-27/VF-27E: One or two sequential time slots (one for each two active channels); starting time slot selectable
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